a 1-hour digestion. At 20 minutes, the digestion solution with sonication reduced plaque area by 46% ($P < .05$) compared with 2% without sonication, which was insignificant.

Conclusions: Our therapy can safely and effectively reduce atherosclerotic plaque burden ex vivo without damaging the arterial wall. Optimization of this therapy will allow for shorter, more clinically relevant digestion times. Ultimately, this therapy shows promise as a novel atraumatic method to reduce atherosclerotic lesions in situ.

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A Single Center's Experience With Partial Late EVAR Explants

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Objectives: Over the past decade, the use of endovascular grafts for endovascular aneurysm repair (EVAR) of abdominal aortic aneurysms has increased significantly. With the increased use of endovascular techniques, there has been a higher volume of endovascular complications. In some instances, it is not feasible or necessary to excise the entire endovascular graft, suggesting that partial excision may be indicated. However, there is not enough literature to support the efficacy of partial graft excision after EVAR. This study was designed to evaluate our institution's outcomes of partial explant patients who underwent EVAR.

Methods: A retrospective analysis of partially explanted EVARs requiring late explantation (>1 month) from 1999 to 2012 was performed using a database. Each patient's postoperative computed tomography (CT) scan was compared with the most recent follow-up CT and subsequently evaluated using computer software to measure graft location within the aorta to determine if any graft migration occurred. Indication for graft removal, type of excision, length of follow-up, and mortality were reviewed.

Results: Between 1999 and 2012, 22 patients had a partial late EVAR explantation. Of these 22 patients, there were four patients with proximal components remaining, 17 patients with distal components remaining, and one patient with both proximal and distal components left. Nine of the 22 (41%) had postoperative and follow-up CT imaging, of which none of these patients had migration of their remaining graft components. The average length of follow-up in these nine patients was 25.9 months. Nine of the 22 patients (41%) were lost to follow-up before having two postoperative CT scans. Four of the 22 patients (18%) died secondary to postoperative infection, shock, and organ failure before being discharged from the hospital after partial EVAR explantation.

Conclusions: Partial EVAR explantation is an option in instances where total excision of an endovascular aortic graft would not be tolerated. All of our partial late EVAR explantation patients who had postexplant CT imaging and follow-up CT imaging demonstrated no migration of their endovascular grafts. Further follow-up in patients with partial late EVAR explantation is necessary to determine if partial graft excision after EVAR is a durable treatment option in the future.

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Safety and Efficacy of Ultrasound Accelerated Catheter-Directed Lytic Therapy in Acute Pulmonary Embolism

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Objectives: This study evaluated the safety and effectiveness of ultrasound accelerated thrombolysis in acute pulmonary embolism (PE).

Methods: A retrospective study of 45 patients (25 male, 20 female) was performed to evaluate treatment of acute PE at a single center from January 2011 to December 2013. All patients were diagnosed with computed tomography (CT) or VQ scan and had hemodynamic instability or right heart strain evidenced by right ventricular dilatation, septal deviation, or hypokinesis by echocardiography or CT. EkoSonic catheters (EKOS Corporation, Bothell, Wash) were placed into the affected pulmonary arteries. Thirteen patients received an average bolus of 30 mg tissue plasminogen activator with an average infusion dose of 21.3 mg (range, 15-48 mg) over 14 hours (range, 8-21 hours).

Results: Hypotension (systolic blood pressure <100 mmHg) was present in 13 patients, with 100% resolution by treatment completion. Tachycardia (heart rate >100 beats/min) was present in 26 patients and resolved in 92% by treatment completion. The average heart rate for all patients decreased from 109 to 77 beats/min over the treatment period. Direct pulmonary artery pressure measurement showed an average decrease of 21.5 mm Hg. Postprocedure echocardiography demonstrated complete resolution of cardiac dysfunction in 64%. There were no deaths through 90 days of follow-up and no major periprocedural bleeding events.

Conclusions: The current study demonstrates the safety and effectiveness of using ultrasound accelerated thrombolysis to treat acute pulmonary embolism.

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Contemporary Outcomes for Carotid Interventions in the State of Michigan

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Objectives: CREST documented similar outcomes for carotid artery stenting (CAS) and carotid endarterectomy (CEA). This study evaluated contemporary outcomes for patients undergoing carotid intervention in Michigan.

Methods: We evaluated the outcomes for consecutive carotid interventions at 22 hospitals in Michigan between January 1, 2012, and December 31, 2013, using data derived from a prospective, statewide quality improvement registry. Outcomes of interest included the occurrence of any transient ischemic attack/stroke, ipsilateral stroke, myocardial infarction (MI), death, and composite end points of stroke/death and stroke/MI/death. Data were stratified on the basis of preoperative symptom status. The Cochran-Mantel-Haenszel test was used to determine the common odds ratio from stratified binary variables, and propensity score matching (PSM) was used to account for demographic differences between CAS and CEA patients.

Results: Of 3136 patients undergoing carotid intervention, CEA was performed in 2482 patients (79.1%) and CAS in 654 (20.9%). For patients undergoing CEA, the rates of in-hospital transient ischemic attack (TIA)/stroke, stroke/death, and stroke/MI/death were 1.9% (n = 47), 2.3% (n = 57), and 2.7% (n = 68). For patients undergoing CAS, the rates of in-hospital TIA/stroke, stroke/death, and stroke/MI/death were 5.5% (n = 36), 6.3% (n = 41), and 6.7% (n = 44). When stratified on the basis of preoperative symptom status, the rate of TIA/stroke was significantly higher for CAS than for CEA in both asymptomatic (5.1% vs 1.5%; odds ratio [OR], 3.6; 95% confidence interval [CI], 1.9-6.7) and symptomatic (6.0% vs 2.7%; OR, 2.3; 95% CI, 1.2-4.3) patients (common OR, 2.8; 95% CI, 1.8-4.4; $P < .001$). Follow-up data were available at 30 days for 2838 (90.4%) and at 1 year for 1131 (36.1%). The rates of subsequent stroke, MI, and death were not different between CAS and CEA at 30 days or 1 year. In propensity matched analysis (n = 1308), no differences in the rate of stroke, MI, or death were observed.

Conclusions: In Michigan, CAS is associated with increased rates of in-hospital TIA/stroke as well as the composite end points of stroke/death and stroke/MI/death. The complication rate was especially high among patients with asymptomatic disease. Patient-specific and clinical decision-making factors appear to explain the observed differences in outcomes, emphasizing the importance of patient selection in CAS.

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Rethinking the Cause-and-Effect Relationship Between Renovascular Hypertension and Renal Artery Stenosis

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Objectives: Renal artery stenting has not proven to be efficacious for the treatment of renovascular hypertension (ASTRAL, CORAL). This study provides evidence using Doppler findings and fluid mechanics that the